the fever terminates favourably in copious perspiration,* or it may be with atony of the heart, and exhibition of new symptoms,—the scene closing in death.

236. I have seen some patients in whom there appeared such a remission of fever, that they approximated to a state purely apyretical; and in a few cases I witnessed slight shiverings and coldness of feet; but scarcely have I met with that shade which could be considered as intermittent.

II. *Contributions to the Pathology and Treatment of Diseases of the Chest.* By Eben. Watson, A.M., M.D., Professor of the Institutes of Medicine in Anderson's University.

ON THE LOBULAR PNEUMONIA OF CHILDREN.

THE pulmonary diseases of children present many difficulties both to the practitioner of medicine and to the student of pathology. Nor do the writings of even the best authors on the subject always tend to remove these difficulties. Confused statements of fact are too often mixed up with, or made to sustain some plausible but insufficient theory, and thus the whole is either obviously unsatisfactory, or fails to account for all the phenomena which an extended survey of the disease brings into view.

These remarks have been dictated by an examination of the statements of authors more especially on the subject of my present communication. "Indeed," as Hasse observes, (Pathological Anatomy, Syden. ed. p. 251)—"the greatest discrepancy of opinion, or rather the greatest confusion, prevails" as to the pathological import of *lobular pneumonia.* And when one considers that it is only upon correct and definite views of the pathology of any disease that a rational treatment of it can be founded, my selection of a subject will need no apology; or if anything of the kind ought further to be stated, it should be a reference to the frequency and fatality of the disease. It is impossible to attain to anything like statistical accuracy on this point, but all careful practitioners will bear me out in the general statement, that this disease is the proximate cause of death in a large proportion of cases which appear in our mortality bills as deaths from bronchitis, from hooping-cough, from measles, and probably from several other diseases of infancy and childhood.

I shall, in the following short paper, pass rapidly under review:

1st, The morbid anatomy and clinical history of lobular pneumonia.

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* "Sudor ille quidem esse optimus, qui die critico febrem solvit."

2d, The theories of the origin and pathological nature of the disease; and

3d, The therapeutic indications presented by it, and the most suitable means for their fulfilment.

Looking to the disclosures of the scalpel in subjects dead of this disease, there are evidently two kinds or degrees of it; one in which the affected lobules are isolated, with healthy pulmonary tissue intervening; and another in which the superficial lobules of greater part of a lobe, or of all the lobes of a lung, are implicated. In all my cases of lobular pneumonia, the disease has invariably affected only one lung, and more frequently the anterior than the posterior lobules of its lower lobe. In the inspections which I have had the opportunity of making, but which, it must be confessed, do not number very many, I have generally found the *superficial* lobules specially affected by the pneumonic condensation; and I am inclined to consider this the general rule in children; for in adults, when lobular pneumonia results from phlebitis, some of the central lobules are more usually attacked, and in the latter cases also, more frequently than in the former, does suppuration, or the third stage of the pneumonic process, ensue before the death of the patient. But wherever it is situated, whether on the surface or in the substance of the lobe, in the cases with which I have at present specially to do, the affected lobule is usually found of a deep red or violet colour; it does not crepitate when pressed between the fingers, but a little bloody fluid is generally squeezed out of its air tubes; it sinks in water, and its cells can only sometimes be inflated. Its cut surface is smooth and like that of hepatized lung. The capillaries in the walls of the air cells are gorged with dark blood, and they seem thickened with exudation matter. The lining of the bronchial tubes, especially of the smaller ones near to the diseased lobule, are generally deeply congested, and contain frothy mucus, which is occasionally tinged with blood.

Morbid anatomy, therefore, establishes two lesions in most of these cases, viz. bronchitis and condensation of the vesicular tissue of the lobules. It cannot, however, prove to us the priority of either of them. For evidence on this point we must look to clinical data, but even these do not afford a very satisfactory solution of the difficulty. I am well aware of the common opinion that lobular pneumonia is always secondary, but I am by no means persuaded that this opinion rests on a logical foundation. True it is, that in many cases bronchitis *seems* to precede, for a longer or shorter period, the pneumonic condensation of the lobules; but this is neither a universal nor a necessary course of things.

Case I.—I have notes of one case, of a child six years old, that died suddenly in a fit. He had been in good health up to the very day of his death, when certain obscure head symptoms presented themselves, but nothing to direct attention to the chest. On inspection, however, I found the whole *anterior* surface of the right lung, to the depth of about an inch, condensed, and of a violet colour. In fact the superficial lobules were in the second or hepatization stage of pneumonia. There was no trace of inflammation in the bronchial tubes, but there was deep venous congestion of the brain and its membranes, with slight effusion into the ventricles.

In this instance, then, the lobular inflammation seems to have been primary. The morbid process had not extended to the bronchi at the time of death, and hence, perhaps, the want of cough and other marked symptoms of pulmonary disease. It was truly a case of *latent pneumonia*—a character which some have thought so constant as to lead them to describe it under that name.* For even when *all* the symptoms direct attention to the lungs—when the patient has all the symptoms of acute bronchitis, the lobular affection frequently remains undiscovered till after death. There are no physical signs by which the condensation of isolated lobules can be determined in the living subject. The condensed portion is far too small, even were it not surrounded by air-containing vesicles, to give a dull sound on percussion; and neither the crepitating râle, nor any other distinctive murmur, is to be heard. Even when many lobules have become affected with the disease, it is still difficult to detect it by physical signs. The tone on percussion is but slightly, if at all altered, owing to the sponginess of the tissue behind the condensed layer; there is still no distinctive murmur heard through the stethoscope, and only an unusual faintness of the respiratory murmur, with *distant* bronchial râles. The sputa are seldom seen in these cases so well as to assist the physical diagnosis.

Nor are the rational signs often more available for diagnosis. It is difficult to determine the amount of pain, especially if of a dull character as pneumonic pain is known to be, suffered by young children, and the fever that exists is not greater than in cases of ordinary acute bronchitis. In some instances I have thought that the increased dyspnœa and the decubitus of the patient, marked the extension of the inflammation from the capillary bronchi to the air cells. For, although I cannot agree, with Seifert, to call this disease a bronchio-pneumonia, inasmuch as the pneumonia is present, in some cases, without the bronchitis, and while I acknowledge the great practical difficulty of determining the priority of the morbid affections, when co-existing in the same case, yet just because of that difficulty, and because of the inherent probability, or I might perhaps say the actual occurrence, in many cases, of this very sequence of events, I cannot deny its foundation in fact. The cases to which I here refer, as most clearly illustrating the fact that lobular pneumonia is sometimes secondary, are those in which it occurs in the course of hooping-cough, long ago pointed out by Dr. Alderson.*

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* *E.g.* Guersent in Dict. de Medicine, tom viii. p. 96.

Case II.—I once watched such a case, the subject of which was a healthy infant at the breast. The other members of the family took hooping-cough, and in due course the baby was likewise affected. The disease was severe and was unchecked, for I had not at that time thought of the topical treatment. In a few weeks, however, a change occurred, evinced by a marked degree of dyspnœa continuing during the intervals of the hoops, and by a peculiar short cough without the hoop at all. She did not survive; and on dissection, I found the superficial lobules of the lower lobe of the left lung in a state of firm hepatization, and considerable vascularity of the whole bronchial mucous membrane.

I think the history of this case warrants the belief, that the hooping-cough and bronchitis existed first, and terminated in lobular pneumonia. I could relate many other very similar clinical histories warranting, perhaps, a similar conclusion, but as they were not confirmed by autopsy, I omit them at present.

Not only, however, may bronchitis pass into lobular pneumonia, but this latter may involve the deeper lobules of the lung, and thus terminate in lobar pneumonia. To my mind this would seem *primâ facie*, not only possible, but even probable; for both the anatomy of the lung and the progress of inflammation in other parts, warrant the presumption. Nor does clinical experience fail to supply illustrations of the fact; but before citing one such illustration, for I must content myself with only one, I may state it, as the result of my experience, that it is only after passing through this stage—after lobular has in some part of the lung become lobar pneumonia—that pleuritis occurs in these cases. I believe it will be found generally true, that lobular pneumonia is uncomplicated with inflammation of the pleura.

These, and several other points of interest, are well illustrated by the following case, which occurred to me last winter.

Case III.—A stout, and previously healthy child, was affected with symptoms of ordinary catarrh, which were treated for a time by domestic remedies. But when the fever began to run high, and the breathing to be markedly difficult, I was called in.

I found, on examining the chest, that the percussion sound was not altered, except in the præcordial region, where the natural *dulness* was both deeper and more extended than usual. The heart's impulse was strong, and the sounds were loud; but considering the age of the child and her other symptoms, I did not hesitate to refer the dulness to a pulmonary, and not to a cardiac lesion.

Auscultation informed me of the existence of bronchial râles over the greater part of the left side, and in front the respiratory murmur could not be distinctly heard. I at first thought that this was owing to the co-existing bronchitis, but am now convinced that it arose in great measure from another cause. In and around the præcordial region, however, there could be no doubt that there was deep condensation of the pulmonary tissue, for I could only hear dry bronchial respiration in that part. No friction sound was detected. In the other lung the respiration was puerile.

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* Medico-Chirurgical Transactions for 1830.

The treatment consisted in the application of leeches, followed immediately by a blister, and repeated doses of calomel and antimonial wine, the bowels having been freely acted on before I saw the patient.

A slight improvement seemed to follow the first use of these means, but this was only of short duration; for the respiration became even more rapid, and the fever more distressing. Rest was only procured for short periods by the help of opiates. I again and again ordered large blisters over the affected side, in hope of relieving the oppressed lung, and I endeavoured at the same time to sustain the strength of my patient by dietetic measures, but all my efforts were vain. A new and fatal stride in the progress of the malady was too plainly indicated by a rapid failure of strength, and a slight rigor, which occurred on the fifteenth evening after my first visit. After this she refused to lie down at all, but sat on the nurse's knee, supported by her hands, crossed over the affected side, to which she constantly leaned. There was no change in the physical signs, except a curious metallic tinkle which accompanied each impulse of the heart, and which I now believe to have been caused by the motion communicated by the heart to the effusion which lay encysted behind its pericardium.

A mixture with carbonate of ammonia was substituted for the antimonial wine, and the calomel was diminished to 3 grains in 24 hours; and solution of the muriate of morphia was more frequently administered. The bowels were kept regularly and freely open by the calomel, without requiring any additional laxative.

Dr. James Watson, my father, saw this little patient with me next morning, and sanctioned my views of the case. We both, however, thought that the heart was at this time slightly displaced to the right side.

I need not continue the details of the case any farther. The oppression of the breathing increased, the child could only lie on the affected side, but still percussion elicited a normal and comtympanitic sound over the back and lower part of the chest, and the dulness was confined to the cardiac region in front. Early on the 21st, she screamed as if suddenly pained; after which she sank rapidly, and died in a few hours. The fatal event happened 17 days after my first visit, and probably not more than 21 after the commencement of the disease.

On the 23d I performed the inspection in my father's presence. I commenced by percussing the chest, and a distinctly tympanitic sound was given all over the left side, except in the præcordial region, where it was somewhat dull. The usual incisions were next made, and I had just passed my knife through the sterno-clavicular joint and the cartilage of the first rib, when there began to flow from the pleural cavity a large quantity of fully-formed pus. I quickly finished the section of the ribs, and found the whole cavity filled to overflowing with the pus. There was no exudation matter on the costal pleura, but the pleura covering the left side of the pericardium was thickly coated, and the margins of this deposit were loose and ragged, as if they had formed parts of a fibrinous cyst. Other shreds of this cyst were found among the pus. The lung was of course separated by the pus from the ribs, but was not much compressed or diminished in volume. When its substance was cut into, it was seen to be partly condensed, and of a deep-red colour, and partly spongy and natural. The former sank in water, and could not be made to crepitate, while the opposite was true of the latter portions. On more careful dissection, it was seen that the diagnosis I had formed was perfectly borne out by the inspection, for the greater part of the middle lobe, and the whole anterior lobular surface of the lung were hepatized. The heart was displaced to the right side of the sternum, but was itself unaltered. Other organs were normal.

This then was a case at first probably of lobular pneumonia, in the course of which the substance of that portion of the lung behind the pericardium had become hepatized, and the pleura over it inflamed. Exudation matter was thrown thickly out, gluing the pulmonary pleura to that which covered the pericardium, so that when suppuration occurred, the abscess was local, being retained in a bag of false membrane around the posterior aspect of the heart. I have no doubt that the motions of that organ so affected the pus in this situation, as to cause the tinkling sound formerly mentioned as accompanying the cardiac impulse. As, however, the effusion increased in quantity, the sack which contained it burst, and the child died of the shock occasioned by its sudden discharge into the general cavity of the pleura. I need hardly say, that from the position of this local empyema, it would have been impossible, and from the active progress of the disease it would have been useless, to have performed paracentesis at any period of this case. I would also call attention to the fact, which was carefully established before opening the chest, that, excepting over præcordial region and its immediate neighbourhood, there was no marked dulness on percussion, although the pleura was full of pus to overflowing. The left lung was, as I have formerly stated, but slightly compressed against the spinal column, and the heart was displaced, so that we are shut up to account for the sonoriety of that side by the elasticity of its ribs, and the sponginess of a great part of the lung. These causes, especially the first, were allowed to act the more freely in this instance, because, though the pleura was full, it was not stretched in such a way as we see in a general empyema; there was no bulging of the intercostal spaces, the contents of an abscess had merely been poured into it, and a fatal shock had been the result. The parietes were therefore as free to vibrate under the stroke of the hammer, as if their contents had been normal, and the case very strikingly illustrates the fact so ably insisted on by Professor Skoda, that if the greater part of a lung remains permeable to the air, pleuritic effusion of considerable thickness, and pneumonic condensation of considerable extent, may fail to alter, in any very marked degree, the tone of the percussion sound.

There is an interesting, though happily not a very numerous, class of cases of creeping pneumonia, by which I mean pneumonia gradually and sometimes very stealthily extending over perhaps a whole lung, or even the greater part of both lungs. These cases are referred to, in his usual graphic manner, by the late Dr. Graves in one of his clinical lectures (p. 682); and it must strike every one who has witnessed them as wonderful, not that many of the sufferers perish, but that even a few of them recover after so large a portion of the lung had been indurated. Now I think that many of these cases commence in lobular pneumonia, and throw light on its nature and mode of progression, for it is only because of the slow and gradual implication of different lobules of the lung that the remaining part is capable of over-exerting itself so much as to sustain the vital function of the organ. This must, from the nature of these cases, be, generally speaking, matter of inference, but it is sometimes also matter of observation in the concluding stages, if not at the commencement, of the disease.

Case IV.—In February, 1852, I was consulted regarding a boy about twelve or thirteen years of age, who had become gradually breathless. There was no other symptom apparent to an ordinary observer, except perhaps an anxious expression of countenance. On examining the chest, I found the left lung completely consolidated. The percussion sound was perfectly dull, the respiratory sounds were purely bronchial, and the side moved little or none during an act of breathing. On the other side the respiration was puerile.

Blistering, calomel, and diuretics were immediately employed, but could not save the patient from an effusion of serum into the pleura, which occurred a few days after my first visit, and added greatly to the distress and danger of the patient. Dr. M'Farlane saw him with me at this time, and we had some thoughts of puncturing the parietes. However, after extensive vesication and plentiful doses of blue pill, the effusion disappeared, and the boy gradually improved. But it was evident from the physical signs, that the re-solution of the condensed lung began first in the interior, leaving a layer of lobules still condensed externally, so that if the boy had died at this stage, we should have had the ordinary appearance of lobular pneumonia. Moreover, there was no suppuration of any part of the lung in this case; in short, from the peculiar nature of lobular pneumonia, an extreme case of which I believe it to have been, the third stage of the pneumonic process is not exemplified. And this leads me, having stated and illustrated the chief facts in the pathological history of lobular pneumonia, to consider the nature or theory of the disease.

It may seem surprising after what has preceded, that some writers on children's diseases should have fallen into the mistake of denying the inflammatory nature of lobular pneumonia altogether. But such nevertheless is the case. MM. Legendre and Bailly* have endeavoured by the experiment of insufflation, to establish that the condensed part of the lung in lobular pneumonia was merely collapsed, and not the subject of inflammatory action at all. Without acknowledging the researches of Dr. Jorg, an interesting account of which was given by Dr. Graves,† and which is well worthy of attentive perusal, they assumed that the lung in a case of lobular pneumonia had returned to its unexpanded state—the atelectasis of Jorg, and they therefore changed the name to "*état fœtal*," and they tell us that the chief causes of this affection are debility, congenital or resulting from disease, prolonged dorsal decubitus, and obstruction of the bronchi by a thick and abundant mucus. I should have been contented with remarking on this theory of the disease, that it certainly referred to some condition of the lungs with which I was unacquainted, and which was entirely different from lobular pneumonia, had it not been that the theory has been adopted, in its utmost extent, and expounded in a very unmistakeable manner, as the rationale of lobular pneumonia, by Dr. W. T. Gairdner.‡

Dr. Jorg concluded, from his observations—"that in estimating the physiological effects of labour, and the accompanying pains, we must not restrict ourselves merely to the expulsion of the child, and the restoration of the uterus to a state compatible with the mother's safety, but we must consider the act of parturition as acting powerfully by means of its duration, and the number and energy of the accompanying uterine contractions, upon the system of the child, so as to prepare it for new efforts necessary for the discharge of the altered functions of respiration; a parturition of the natural duration gradually checks the placental circulation, and limits that of the fœtal chiefly to its own system, while it engenders in the latter a gradually increasing, and finally an urgent want of some new mode of respiration. If the act of parturition be much shorter in duration than is natural, the child incurs the danger of being born in other respects healthy, but not at the moment endowed with the organic stimulus to expand its chest, for the purpose of making the first inspiration. The more urgent this stimulus, the more decided and healthful its effects; the more powerful will be the exertion of the respiratory system, and the more perfect the dilatation of the lungs by the air at the first inspiration."*

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* Archives Génerales de Méd. tom. 64.

† Dublin Journal of Medical Science for 1836, vol. ix. pp. 470–486.

‡ Brit. and For. Med. Chur. Review, No. XXII. p. 453, *et seq.*

I have quoted this passage not only because it contains Jorg's explanation of the origin of atelectasis, but also because many of the truths which it embodies are little, if at all considered either by accoucheurs or by physiologists. There is, however, another purpose which I intend to serve by it, viz. to contrast the physical state of the lung here described with that found in lobular pneumonia. How different is the simple collapse of the air cells from the solidification of the part, by stasis of the blood in its numerous capillaries? Moreover, as Dr. Gairdner himself very shrewdly remarks,† "to admit the persistence (even the persistence) of the lung in the *état fœtal*, as a consequence of interruption to the great physiological changes taking place at birth, does not appear to any mind a very violent proposition; but to understand why the organ should return to that condition after being once expanded, and that without any positive disease of its texture tending to occlude the air cells, is not so easy." It certainly is not easy, nor do I, for my part, think it has been rendered one whit easier by Dr. Gairdner's theory of bronchial obstruction, which he developes in the sequel of his paper.

Dr. Gairdner's theory seems to be a hybrid between that of Legendre and Bailly, formerly stated, and that of Seifert, who considered lobular pneumonia as a simple extension of bronchitis to the terminations of the bronchi in the air cells—a "*bronchio-pneumonia*" in short. Now, Dr. Gairdner accepts the statement of the former gentlemen, that the lobules are in a state of collapse in "so-called lobular pneumonia," and he accounts for this return to the *état fœtal*, by the supposed occurrence of a mucous plug in one of the bronchial tubes, in which it acts as a valve, preventing ingress of air to the air cells, but admitting of its egress during expiration. Now, it does seem to me that Dr. Gairdner brings forward no proof, nor even any plausible reasons, for this theory. The experiments of Traube and Mendelsohn are quite beside the question, for, though they prove that a paper pellet may, if introduced into the bronchus, act in causing collapse of the air cells beyond, they do not prove that mucus would. I believe that either the air would pass through the mucus, supposing it to be fluid, and into, as well as out of the air cells; or that it would remain fixed, supposing it to be insipissated, not permitting the air to pass one way or other. In the former case there could obviously be no collapse of the air cells at all, and in the latter case the result would be a pulmonary abscess. In proof of this statement, I refer, not to experiments instituted on the lower animals, but to the history of actual cases in which foreign bodies have been accidentally introduced into the bronchial passages. Two such cases have come within my own more immediate knowledge. One occurred under my own care many years ago, when acting as surgeon's clerk in the Royal Infirmary. The subject of this case was a little girl who had swallowed a *whelk* into the "wrong throat," and that of the other case was a medical gentleman who, in eating hurriedly, allowed a mutton bone to pass through the glottis. This gentleman was attended by my father. In both these cases the patients passed through a very critical state; but instead of collapse, hepatization and suppuration of the lung occurred, and the foreign body was expectorated. In short, obstruction of the bronchi, if at all complete, would be more likely to produce common pneumonia than the *état fœtal.*

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* Dublin Journal, vol. ix. p. 471.

† Brit. and For. Review, p. 455.

In fine, I think I am entitled to conclude with Hasse, who has given a very able and interesting review of the confused statements of authors on this subject,* that the organic affection of the lungs to which new-born infants are prone, which was named *atelectasis* by Jorg, is altogether distinct from lobular pneumonia. We must therefore seek for the rationale of the latter in some other morbid process; and this has been generally done by referring it to some modification of inflammatory action. Guersent was one of the earliest writers on lobular pneumonia, and his opinion of its origin is expressed in the following sentence:—"Les pneumonies latentes commencent presque toujours par de simple bronchitis que paraissent d' abord très légères; peu à peu ensuite cette affection inflammatoire se communique au tissu vésiculaíre du poumon."† More recently, as I formerly stated, Seifert has given to the disease the name of *bronchio-pneumonia,* and besides him, many others, among whom Dr. Cheyne may be numbered, have adopted the theory in question. There is, however, a numerous class of writers who consider lobular pneumonia a more specific disease, occurring at least sometimes independently of bronchitis, and not simply an extension of that affection to the air cells.

Some of these, as Billiard,‡ consider the lobular inflammation of the lung as essentially different from ordinary pneumonitis. According to that author—"la pneumonie des jeunes enfans est evidemment le resultat de la stase du sang dans les poumons. Ce sang fait alors, en quelque sorte, l'office de corps etranger; il concourt lui-meme, à alterer le tissue du poumon avec lequel il se mêle, s'organise, s'identifie de maniere à former ce qu' on appelle l'hepatisation du poumon." But this theory has found few supporters among more recent authors; thus MM. Rilliēt and Barthez simply tell us that—"on appelle pneumonie lobulaire cette variété de l'inflammation *qui occupe un ou plusieurs lobules isolés;*"[*] and although Hasse says that these authors describe this lesion as "a *peculiar alteration*, namely, carnification,"[†] yet on a careful perusal of their treatise we do not perceive any difference made between lobular and lobar pneumonia, except the site of the morbid process. Indeed they treat of "la carnification" in a different chapter.

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* Pathological Anatomy, Syden. edition, p. 251.

† Dictionaire de Medicine, tom. viii. p. 96.

‡ Traité des Maladies des Enfans, p. 534.

Rokitanski states the same opinion more distinctly, as follows:—"Pneumonia, according to its variety, attacks a whole lobe, or the greater part of one, and it is then termed *lobar;* or it attacks only smaller portions of the lungs, a number of individual lobules, or single aggregations of lobules, between which we find the parenchyma in a comparatively normal state, it is then termed *lobular pneumonia.*"[‡] And touching the variety of inflammation which attacks the lobules, he tells us farther on,[§] that it is the catarrhal or non-croupous.

M. Grisolle, who has devoted an entire volume to the consideration of the different kinds of pneumonia, seems to follow very closely the opinions and statements of MM. Rilliēt and Barthez, as to the lobular variety; treating of it as—"une des phlegmasies pulmonaires du jeune âge."[||] From his indistinct and prolix statements, we turn with pleasure to the pages of M. Lebert, who tells us[¶] that—"l'afflux sanguin qui constitue l'engouement pulmonaire, est suivi d'une gêne de plus en plus grande dans la circulation pulmonaire, gêne qui se termine par *une stase partielle lobulaire ou plus etendue.*" This occasions a transudation of liquor sanguinis, in which are found "des globules granuleuses," as well as blood corpuscles from ruptured vessels. These elements gradually consolidate and form "le ramollissement rouge" of Andral, which, as I formerly mentioned, is the common state in which we find the diseased portions of a lung affected with lobular pneumonia.

I am myself inclined to agree with M. Lebert in his theory of this disease, and to account for the fact just stated, viz. that we generally see the second stage of the pneumonic process exemplified in the hepatized lobules of children, by their inability long to survive any important interruption to the function of respiration. They therefore generally, though not universally, succumb to the disease before it has reached its third and final stage. But in adults, in whom the disease is almost constantly secondary, resulting from some form of phlebitis, we just as commonly meet with suppuration of the affected lobules before the patient dies. But while I would, therefore, accord to the proposition that lobular differs from lobar pneumonia in no essential, excepting the extent of the part affected by the disease, yet for reasons formerly given I cannot deny, nor is it necessary for consistency that I should deny, that the pneumonic affection is frequently secondary to bronchial inflammation, as Guersent originally stated. One has only to study the minute anatomy of the terminal bronchi, to be persuaded that inflammation may invade the air cells, by reason of their continuity with the bronchi, and yet the disease secondarily produced is something very different from bronchitis. For how materially is the structure of the tubes altered on their approach to the air cells; how few of the characters of a mucous membrane does their lining membrane retain. Why, about one-eighth of an inch from the last air cell to which it leads, according to Messrs. Todd and Bowman, the terminal bronchi lose their epithelium, as well as their muscular tunic, and are "reduced to basement membrane, and yellow elastic fibres, which become blended into a single coat—the only membrane composing the tubes beyond, and the air cells."* If, then, the structures of these two parts of the same tube are so widely different, it is but in accordance with the laws of the animal economy that disease should evoke from them different morbid products, and be accompanied with different pathological results. Thus it is, in short, to quote once more the words of Lebert, that—"ces divers états, tout différents les uns des autres qu' ils paraissent au premier aspect, ont pourtant entre eux des lieus physiologiques bien réel et faciles à démontrer."†

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[*] Traité Clinique et Pratique des Maladies des Enfans, tom. i. p. 62.

[†] Path. Anat. p. 256.

[‡] Path. Anat. Syden. edition, p. 83.

[§] Page 90.

[||] Traité Pratique de la Pneumonie, p. 448.

[¶] Physiologie Pathologique, tom. i. p. 127.

Having thus, at some length, explained the nature of the lobular pneumonia of children, I must now discuss the subject of its treatment in a very few, and these very short paragraphs.

The first therapeutic indication is to relieve the congested lobules and equalize the circulation through the pulmonary capillaries. As an essential step to this end, the secondary excitement of the general circulation must be allayed; the heart's action must be diminished, in order that the over-loaded pulmonary capillaries may have time to disgorge their contents into the radicles of the pulmonary veins. And in pursuing this object, we must bear in mind the normal forces, the full operation of which we desire to recall. We must remember the power which a natural and full act of respiration exercises over the motion of the blood within the lungs, as well as the undoubted influence which the chemical changes there wrought in the blood exerts over its passage through the capillaries, where these changes are, or ought to be effected. It is not the quickness of the breathing, but the fulness of it which brings into most effective operation the forces just mentioned. The irritated or oppressed lung excites numberless imperfect respirations, a hundred of which do not accomplish the atmospheric interchange of one such normal act.

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* Physiological Anatomy, p. 390.

† Phys. Path. tom. i. p. 129.

It is therefore a matter of immense moment in these, and indeed in all the pulmonary diseases of children, to soothe their nervous excitability; and fortunately this may often be effectually done by the very same measure that is best calculated to excite the perspiratory function of the skin, viz. the warm bath. The bowels should also be freely moved, not only in the commencement, but during the whole duration of the case; for it is a fact well known to all practitioners, that any disorder of the primæ viæ operates most perniciously on the excitable nervous systems of children. Besides these means, the use of repeated doses of the tartrate of antimony, either in simple solution or in the form of the antimonial wine of the pharmacopeias, is very useful in moderating the heart's action, as well as in determining to the skin. The tolerance of antimonials in children affected with acute lobular pneumonia is often very great, and is perhaps greater than in adults, proportionally to the age of the patients. Lænnec has stated that the patient becomes habituated to the drug, so as to tolerate it in large quantities even during convalescence,* and after the violence of the inflammation has been subdued. But I have not verified this statement in regard of children, who, on the contrary, bear the continuance of the medicine very ill in any state of weakness, whether during convalescence from the violence of the disease, or when sinking under its effects. This remedy, therefore, should be given with care and watchfulness; and, when so given, it is perhaps our most generally useful remedy in the early stages of the pneumonic affections of childhood.

I have never found it necessary to use the lancet in the case of young children who have been attacked by this disease, but I have found the application of leeches always beneficial in its early stage. But as the disease is apt to be of considerable duration, (from two to three weeks, or even longer,) unless its progress be cut short by a fatal issue, the number of leeches employed at first should not be great,—they should rather be repeated, if their effect be deemed insufficient. "I am most anxious," says Dr. Stokes,† "to press the importance of local bleeding in the treatment of pneumonia, for I consider it as the principal remedy." And, whatever doubts I may have as to the truth of this proposition when stated generally, I cannot hesitate to subscribe to it in regard of the lobular pneumonia of children. Nor is it less, but on the contrary even more true of children than of adults, that "we may, directed by the stethoscope, continue day after day to detract blood from the affected part, while the patient's strength can be supported by food, and even by wine, if necessary."‡

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* Lænnec, Forbes' Translation, p. 256.

† Stokes on the Chest, p. 343.

‡ Op. citat. p. 344.

Of course this opinion, like all others involving general rules of practice, must be acted upon with due caution and discrimination, especially as to the type of the inflammation, and the age of the patient in any particular instance under treatment. I generally in these cases follow the bleeding by an opiate, by which means, I believe, its sedative effect is increased and perpetuated.

At a somewhat later period of the disease, though indeed there is but little time to come and go upon, blistering is of undoubted benefit, both by its contra-irritant and stimulant effects. I know that there is a prejudice against blisters in childhood, and especially if the patient, as often happens, is at the same time labouring under some of the enanthemata, *e.g.* measles, but I believe that there is no real danger in the case, nor even the same frequency of painful dysury as among adults. I do not doubt that in some severe epidemics of measles, the effects of blistering the skin were very severe, and even sometimes fatal, but in ordinary seasons it would be foolish, if not criminal, to omit such a powerful remedy for the dread of an historical evil.

During the same period of the disease, the exhibition of mercurial remedies is sometimes of essential service. I say *sometimes*, because I have not much faith in the antiphlogistic powers of the drug, and if there be no exudation or effusion, its absorbent action is little or not at all required. It is, moreover, very difficult to bring young children fairly under the mercurial influence, and therefore, in their case, any effects flowing therefrom are not perhaps to be much relied upon. There is, however, one excellent and undeniable effect of administering repeated doses of calomel, and that is, the maintaining a regular discharge from the bowels; and as the purgative effect of calomel depends on its cholagogue property, we thus secure a favourable state of the principal digestive organs,—a matter so important, that many will consider it a sufficient justification for the employment of the medicine, without expecting any specific or local action at the seat of the disease.

Emetics are especially useful in cases in which bronchitis complicates the pneumonic affection, and these I should repeat as Lænnec recommended, at short intervals during the course of the disease, "according to the patient's strength, and his power of supporting their action." I may remark here, that it is often difficult to make these young patients vomit, and they often require even powerful emetic doses to be administered every quarter or half-hour, till the effect is produced. Unless the vomiting be free, but little good is done; the bronchial tubes are not sufficiently cleared to admit fresh air to the air-cells, nor has the previous depression of the system been sufficiently great to produce a marked effect on the fever.

The subjects of regimen and diet might, in such a paper as this, be altogether omitted, were it not for their paramount importance. Indeed, such is their importance to the successful treatment of these cases, that no less an authority than Professor Skoda is said to rely upon them alone. "Après avoir reduit la traitment de la pneumonie à l'administration du sublimé à très petites doses, le Professeur Skoda a fini par s'en tenir à l'emploi des moyens diétètiques et en particulier du regime lacté."* And though I cannot yield my unconditional assent to such negative treatment, even when sanctioned by the authority of so eminent a physician, yet I do not know that any part of the practitioner's duty is more important than that of prescribing an appropriate diet, and directing the attention of nurses and friends to the due ventilation and heating of the apartment in which the patient is confined.

III. *On the Therapeutical Properties of some of the more important Articles of the Materia Medica.* By William Davidson, M.D., formerly Physician to the Glasgow Royal Infirmary, and Lecturer on Materia Medica.

The following remarks have been written, not with the view of propagating anything specially novel, but rather with the object of dissipating exaggerated notions, and simplifying medical practice. The evidence for or against the virtues of many drugs is almost interminable, and there is not space here for such a discussion; but surely there is something in the fact, that many writers on materia medica, &c. have been merely chroniclers of results and averments of cure, which were founded on too limited a number of experiments, or were coincidences, due not to the agent employed, but to nature, time, or the hygienic accompaniments.

MEDICINES WHICH ACT ON THE BRAIN AND SPINAL MARROW, (*Narcotics.*)

I.—OPIUM.

This medicine being probably the most important in the materia medica, when judiciously employed, deserves a careful consideration. When taken in a moderate dose in a healthy individual, it causes slight cerebral excitement, dryness of the mouth, a little acceleration of the pulse, an astringent effect on the bowels, and checks many of the secretions, with the exception of that of the skin, which is sometimes augmented. These effects are increased by larger doses, so as to cause considerable disturbance in the functions alluded to. It is obvious, therefore, that in diseased actions these considerations must be taken into view in estimating its curative or palliative operations on the system. It has been

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* Archives Generales, 4e série, tome xxix. p. 343.